

SCIENCE & EDUCATION Impact

Benefits From the USDA/Land-Grant Partnership

Healthy and Happy Animals

When animals are contented, producers' profits soar.

Animal production is big business in the United States. Producers face many challenges in ensuring that their animals remain healthy and are raised in humane environments. U.S. Department of Agriculture (USDA) and Land-Grant scientists and specialists conquer costly diseases through vaccines, computer diagnoses and analyses, and innovative techniques.

Payoff

- **Milk, not mastitis.** Mastitis—an inflammation of a cow's mammary gland caused by bacterial infection—costs the U.S. dairy industry \$2 billion a year. **Iowa State** experts developed a breathable teat sealant, reducing mastitis in Iowa by 40 percent and saving each adopting Iowa dairy producer about \$6,500 a year. **Georgia, Louisiana State, Ohio State, and Washington State** are working with producers on this and other ways to prevent and manage the disease.
- **Cool cows, dude.** With mist and high-speed fans, agricultural engineers at **Auburn** and **Kentucky** are cooling off cows to heat up milk production levels. The 100 Kentucky dairies adopting the system showed a 15 percent increase in milk production. One dairy farmer reported production improvements valued at \$8,000 in the first month of installation.
- **Chickens suffer from gas, too.** Feed made with rotting fish and poultry byproducts contains toxins that can cause intestinal disorders in chickens, leading to lower weights and greater production costs. **Mississippi State** scientists developed a test to ensure that these byproducts are toxin-free before being processed into feed. As a result, Mississippi feed-ingredient suppliers and poultry producers save at least \$1.5 million annually.
- **Well-balanced diets during winter.** Supplemental feed purchases during winter represent the largest out-of-pocket expense for beef producers. **Texas A&M** scientists have created computer software that analyzes the nutrient content of manure and advises ranchers on the most cost-efficient nutrient management approach. Currently, more than 1,200 ranches in 42 states use the system to tailor feed regimens to cattle's

RESEARCH,
EDUCATION, AND
EXTENSION
AT WORK

SCIENCE & EDUCATION Impact

Benefits From the USDA/Land-Grant Partnership

nutrient needs. **Montana** Extension personnel helped one producer save approximately \$9,000 by implementing less-expensive feeding regimens. In one Montana county, 87 ranchers reported collective savings of at least \$100,000 in 1997. **Cornell** scientists created a similar system for predicting the nutrient needs of dairy cattle, reducing feed costs by \$42,000 per year and nitrogen in manure by one-third in a single herd. The potential statewide impact in **New York** is \$35 million.

- **Cattle don't take well to mud baths.** Mud may be good for pigs, but cattle can pick up bacteria by standing in muddy areas, resulting in foot or leg inflammation, mastitis, or even death in calves. In the past, producers installed expensive concrete pads to alleviate the problem. But **Kentucky** researchers have developed a fabric-to-bridge muddy feeding or loafing area that is then topped with a rock pad. This system involves one-third the cost of a concrete pad and allows better drainage, reducing runoff and soil erosion. About 20 percent of Kentucky cattle farms have installed the fabric, resulting in fewer calf deaths, reduced disease, and commensurate cost savings.
- **The Super Bowl team for dairies.** **Minnesota** Extension specialists organized diagnostic teams of veterinarians and agribusiness professionals to help 39 dairy farms identify farm goals and priorities, develop action plans, and implement better health management techniques. With the team's guidance, these producers increased the state's average annual milk production by 446 pounds per cow—boosting profits by \$56 per cow.
- **Pining away.** During winter, many pregnant beef cows will eat Ponderosa pine tree needles and give birth prematurely. As a result, producers in 17 states lose up to \$20 million annually. **Iowa State** and USDA researchers have found that a lipid in the ingested pine needles reduces blood flow to the uterus. By identifying this substance, the scientists are closer to developing an antidote for the problem. Several companies are now investigating whether this lipid could be used to treat high blood pressure, migraine headaches, and postpartum bleeding in humans.
- **Lovely June calves.** **Nebraska** scientists discovered that moving the calving season from March to June allows young cows to graze when grasses are at their

peak nutrient level—a vital benefit for calves. Summer calving reduces feed costs for lactating cows by \$75 per cow, reduces calf sickness and death losses, and allows producers to sell calves at higher prices on the off-season market.

- **Soybeans roasting on an open fire.** Dairy cattle that digest and absorb more protein produce more milk than cows that don't. But the bacteria in a cow's rumen often absorb most of the protein before the cow itself can. Soybeans are a potential protein source for dairy cattle. However, when cattle are fed raw soybeans, only 20 percent of the protein escapes the rumen bacteria. **Wisconsin** researchers found that when cattle are fed roasted soybeans, up to 60 percent of the protein escapes the bacteria. Roasting soybeans for feed has become a \$24 million industry in Wisconsin.
- **Vaccines keep the doctors away.** Land-Grant researchers are rapidly developing vaccines for some of the nation's most dreaded livestock diseases. A team of scientists from **Florida, Idaho State, Iowa State, Louisiana State, North Dakota, Texas A&M, and Wyoming** has developed and are testing a brucellosis vaccine that doesn't cause vaccinated cattle or bison to show up as infected animals when tested. **Delaware** scientists are close to creating vaccines for two poultry diseases: a herpes virus that affects the respiratory system and a bacteria-like organism that weakens the immune system. **Florida** researchers have developed two vaccines to combat heartwater disease—a tick-borne illness that attacks the blood vessels of livestock and wildlife. A **Mississippi State** researcher has developed a single-injection, inexpensive vaccine that's estimated to reduce poultry deaths resulting from coccidiosis by up to 80 percent.



United States Department of Agriculture
Cooperative State Research, Education, and Extension Service

USDA/Cooperative State Research, Education, and Extension Service in cooperation with the Extension Committee on Organization and Policy and the Experiment Station Committee on Organization and Policy.

USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202/720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202/720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

May 1998